

# Where are the Telecommunications Infrastructures of EDM?

A de Sousa Fernando  
EDM Transmission Director  
asousa@edm.co.mz

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## POWER SECTOR: Background

- EDM was created in 1977 with monopoly on GX, TX & DX
- Law on Public Companies was approved in 1991 (Law No. 17/91)
- EDM was transformed into a Public Company in 1995
- The Electricity Law was approved in 1997 (Law No. 21/97)
- New players were allowed to participate in the Power Sector
- Reorganization of EDM is currently ongoing (ESI reforms)

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## THE COMPANY: Vision & Mission

### VISION:

**With Energy we build the Future**

### MISSION:

**The operation of the public service of Generation, Transmission, Distribution and Commercialization of electricity in Mozambique, in defence of the interests and to the benefit of the consumer.**



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## THE COMPANY: 2004 Key data

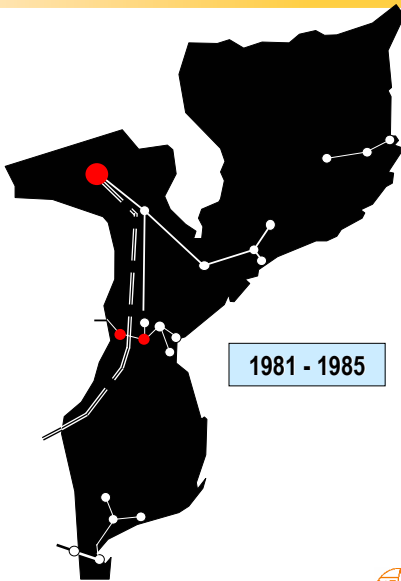
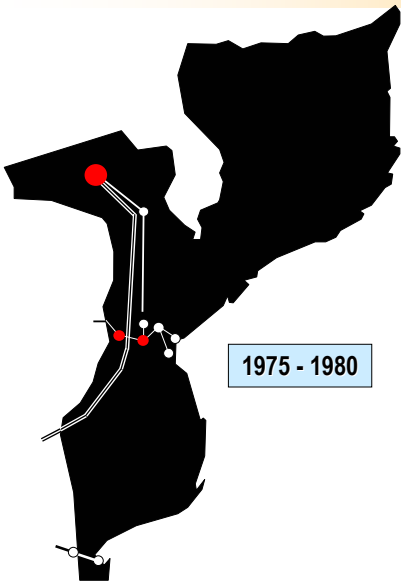
Nº	ITEM	UNIT	DATA
1	Installed Capacity	MW	177
2	Maximum Demand	MW	266
3	Transmission lines	km	3,903
4	Substations (power transformers)	MVA	3,232
5	MD Growth	%	3.1
6	Sales	GWh	1,452
7	Sales Growth	%	5.0
8	Number of Costumers		284,562
9	Number of Employees		3,185
10	Sales Revenue	MUSD	103

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# POWER SECTOR: Development of the National Grid

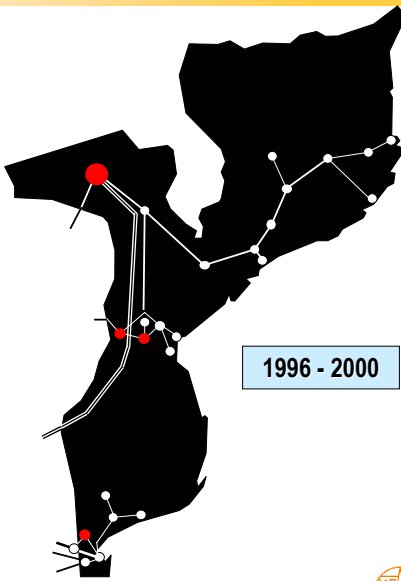
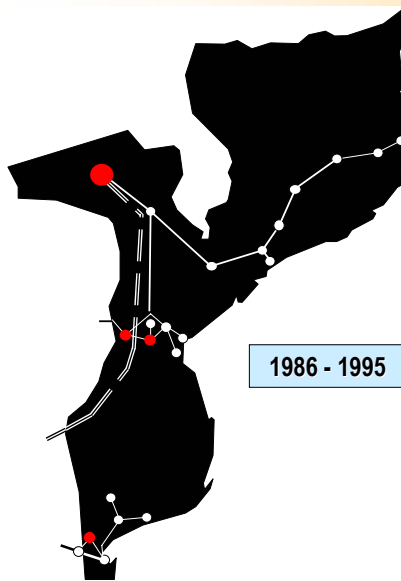


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# POWER SECTOR: Development of the National Grid

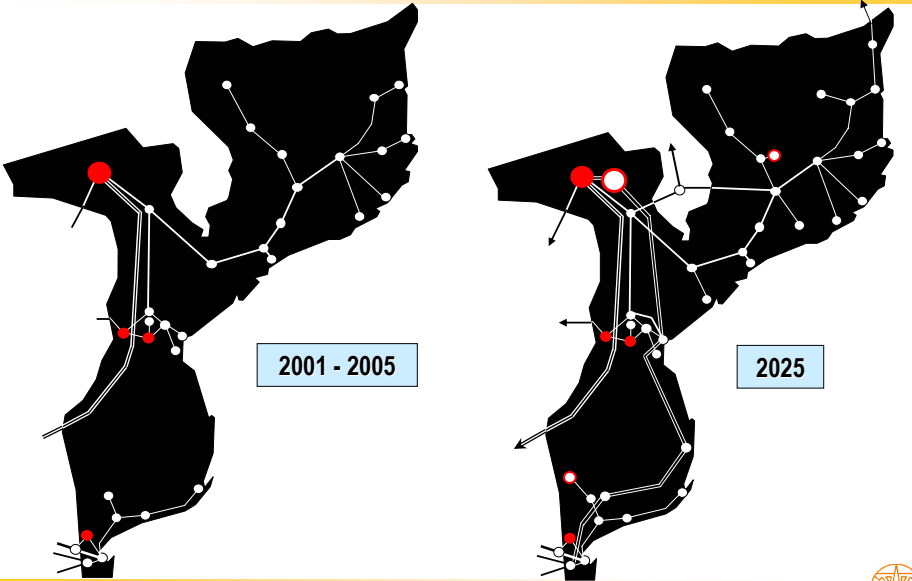


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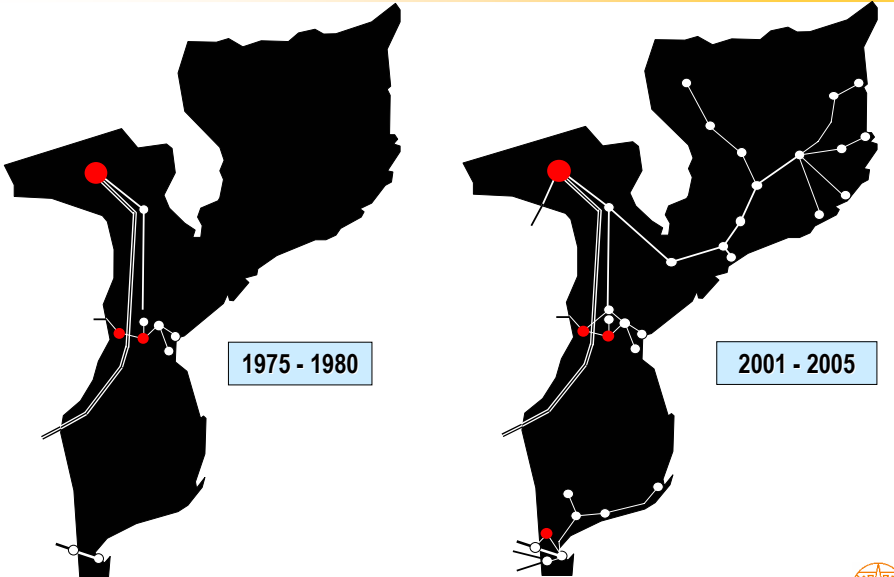
# POWER SECTOR: Development of the National Grid



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# POWER SECTOR: National Grid status



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## Telecommunications Infrastructures of EDM

### Existing systems

#### Radio systems

- **VHF systems** (with repeaters and links for long distances)
- **HF systems** (operation dependent to other factors)

#### Power Line Carrier (PLC)

- **Limited speed**

#### Optical fiber

- **OPGW (Optical ground wire)**
- **Underground optical fiber**

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## Telecommunications Infrastructures of EDM

### Existing systems

#### Current status of fiber within EDM

- **Voice** (between substations)
- **Data**
- **Teleprotection**

#### Status:

- **Number of fiber: 24 pairs**
- **Number of pairs being used: One pair (less than 4%)**

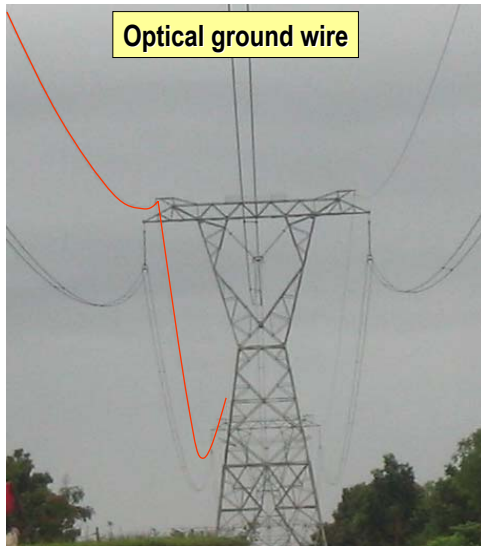
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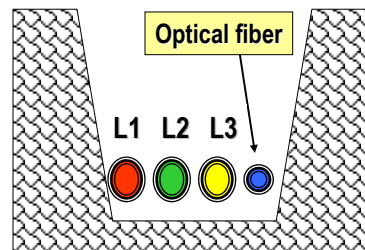


## Telecommunications Infrastructures of EDM

### Existing systems – Examples



Underground optical fiber



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## Telecommunications Infrastructures of EDM

### Optical Fiber – Implementation

- The 1<sup>st</sup> “stage” of OPGW as installed on a transmission line
- It was installed in 2000 on a 275 kV line (85 km)  
**Connecting South Africa (Komatipoort) and Mozambique (Infulene)**
- The installation cost: **US\$ 2 Million**  
Rehabilitation of the 275 kV line: **US\$ 1.15 Million**  
OPGW: **US\$ 0.85 Million**
- Live line works were carried out to avoid outages on the line to Infulene

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## Telecommunications Infrastructures of EDM

### Optical Fiber – Implementation

- The 2<sup>nd</sup> “stage” of OPGW as installed on a 400 and 275 kV lines as part of MOTRACO project (MOZAL)
- The 400 kV section was installed in 2001 (280 km)  
**Connecting South Africa (Candem), Swaziland (Edwaleni) and Mozambique (Maputo)**
- The 275 kV section was installed in 2001 (17 km)  
**Connecting Maputo substation and Infulene**
- A ring was established between South Africa – Mozambique – Swaziland

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## Telecommunications Infrastructures of EDM

### Optical Fiber – Implementation

The 3<sup>rd</sup> “stage” of OPGW as installed on a 66 kV lines with in Maputo city as follows:

- Infulene – Central Térmica de Maputo (CTM)
- 2M – SE7 (Shoprite)
- SE7 (Shoprite) – SE5 (Campus Univesitário)
- Central – Térmica (CTM) – SE2 (Terminal das Oliveiras)
- SE2 (Terminal das Oliveiras ) – SE3 (Mercado Central)
- SE3 (Mercado Central) – SE1 (Tempográfica)

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# Telecommunications Infrastructures of EDM

## Optical Fiber – Implementation

The 4<sup>th</sup> “stage” of OPGW as installed on a 275, 66 and 11 kV lines with in Maputo city as follows:

- Maputo S/S – Matola – Infulene
- Central Térmica de Maputo (CTM) – Matola
- Infulene – Laulane
- Laulane – Mahotas
- Mahotas – SE5 (Universidade)
- SE3 (Mercado Central) – SE7 (Shoprite)
- SE1 (Tempográfica) – PS9 (Bairro Militar)

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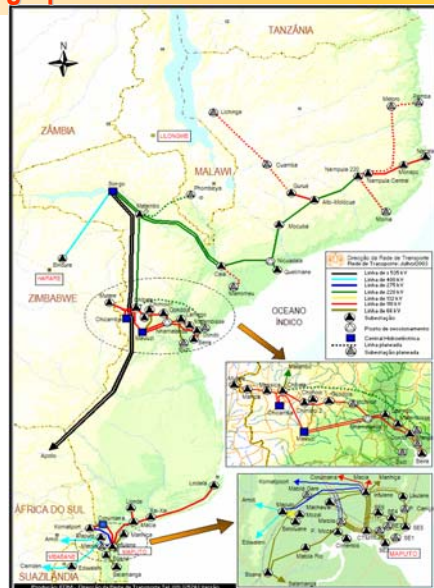
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# Telecommunications Infrastructures of EDM

## Optical Fiber – Geographic location

- The fiber is installed in the Southern part of the counter
- New lines must include a fiber by “default”
- There is a proposal for a fiber on Mozambique – Malawi interconnection



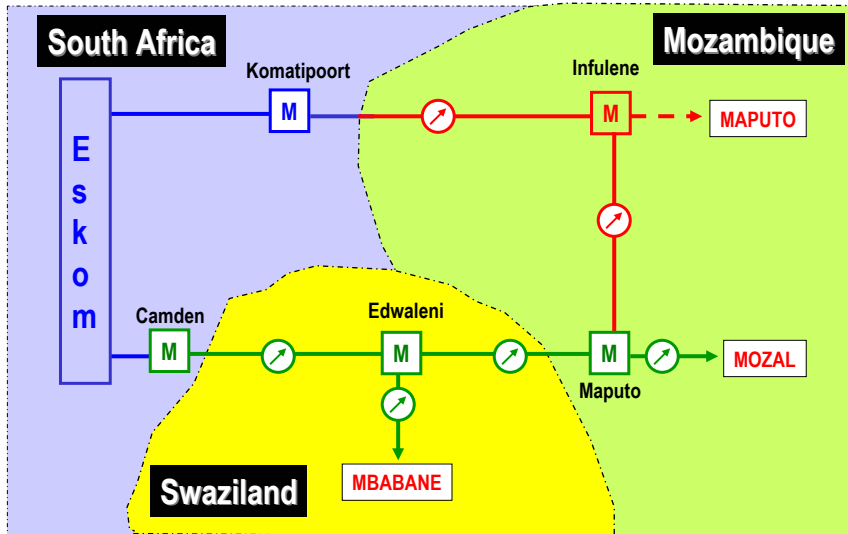
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# Telecommunications Infrastructures of EDM

## Optical Fiber – Geographic location



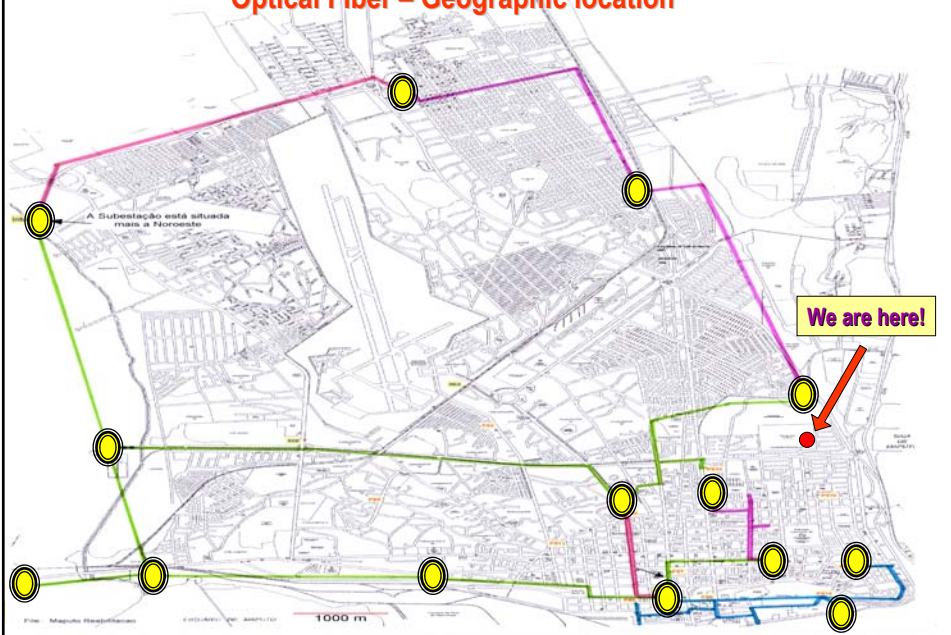
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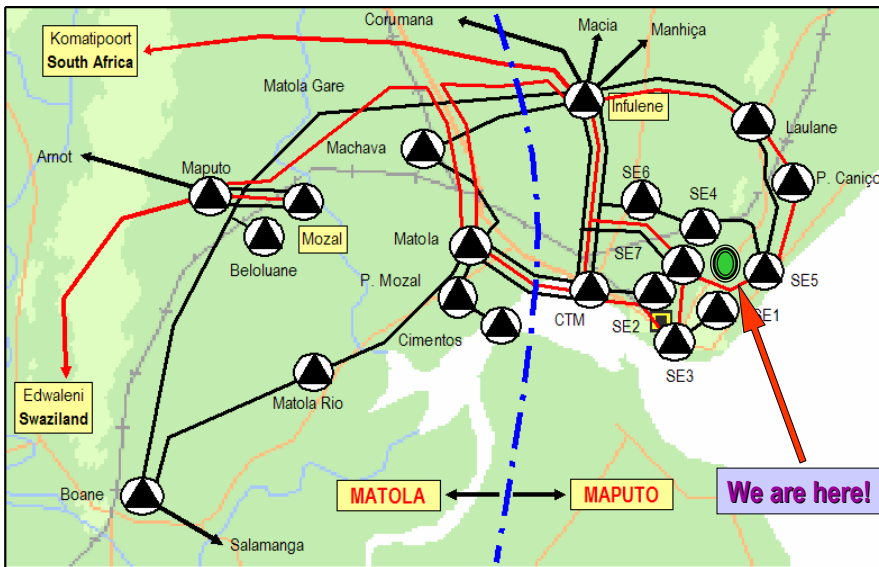
# Telecommunications Infrastructures of EDM

## Optical Fiber – Geographic location



# Telecommunications Infrastructures of EDM

## Optical Fiber – Geographic location



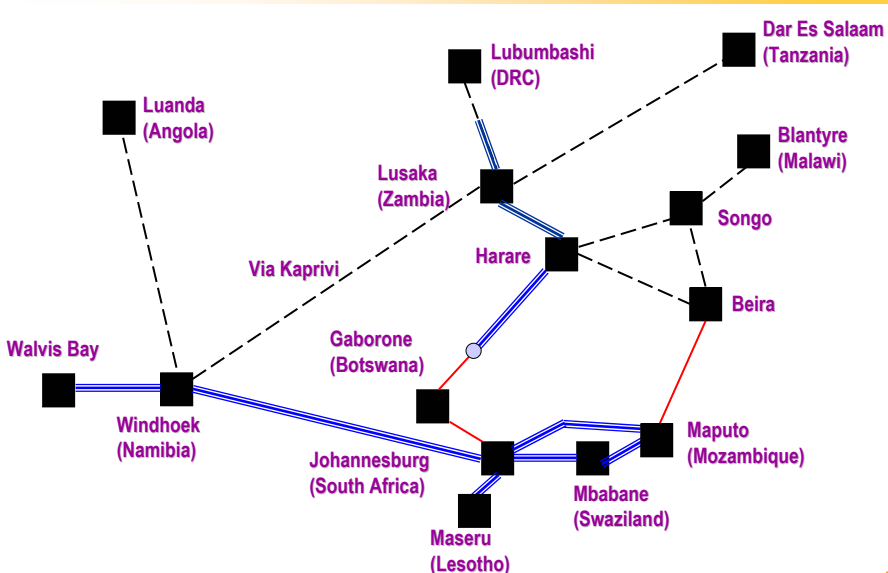
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# Telecommunications Infrastructures of EDM

## Optical Fiber – Regional Integration



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# Telecommunications Infrastructures of EDM

## Optical Fiber – Regional Integration



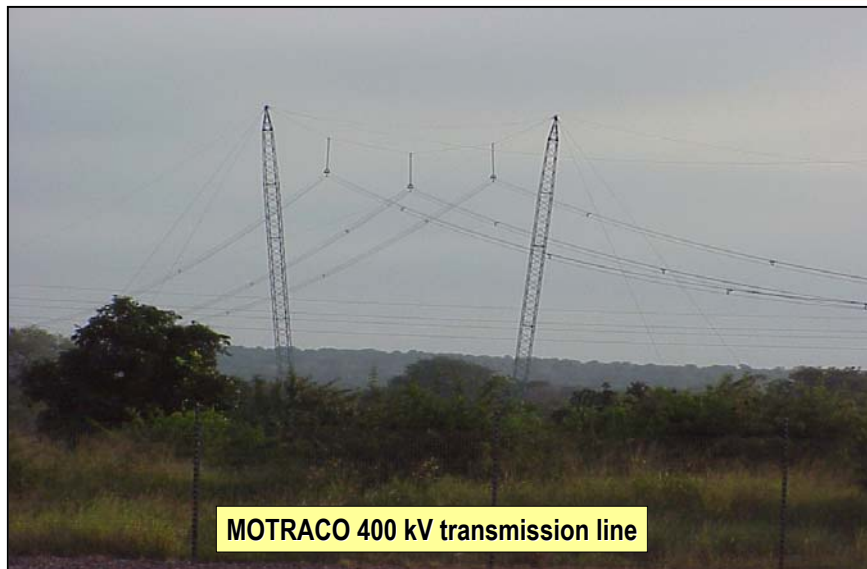
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# Telecommunications Infrastructures of EDM

## Optical Fiber – Pictures



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# Telecommunications Infrastructures of EDM

## Optical Fiber – Pictures



EDM 275 kV transmission line

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